(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 18 August 2005 (18.08.2005)

PCT

(10) International Publication Number WO 2005/075094 A1

(51) International Patent Classification⁷:

B05B 5/16

(21) International Application Number:

PCT/JP2004/017997

(22) International Filing Date:

26 November 2004 (26.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: PCT/JP2004/001361

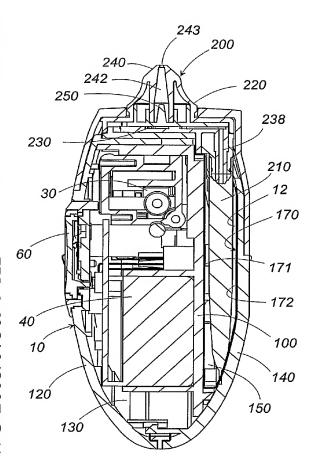
9 February 2004 (09.02.2004) JF

(71) Applicants (for all designated States except US): MAT-SUSHITA ELECTRIC WORKS, LTD. [JP/JP]; 1048, Oaza-Kadoma, Kadoma-shi, Osaka 571-8686 (JP). THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).

- (72) Inventors; and
- (75) Inventors/Applicants (for US only): YAMAGUCHI, Naoki [JP/JP]; c/o Matsushita Electric Works, Ltd., 1048, Oaza-Kadoma, Kadoma-shi, Osaka 571-8686 (JP). NAGASAWA, Shunichi [JP/JP]; 4-1-24-1414, Hamakoushien, Nishinomiya-shi, Hyogo 663-8154 (JP). WILSON, David, Edward [US/US]; 16, Brian Daniel Court, Reisterstown, MD 21136 (US). YAMASAKI, Masayuki [JP/JP]; c/o Showa Products Co., Ltd., 8-14, Ryuzoji-cho, Chuo-ku, Osaka-shi, Osaka 540-0014 (JP).
- (74) Agents: NISHIKAWA, Yoshikiyo et al.; Hokuto Patent Attorneys Office, Umeda-Daiichiseimei Bldg. 5th Floor, 12-17, Umeda 1-chome, Kita-ku, Osaka-shi, Osaka 530-0001 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,

[Continued on next page]

(54) Title: ELECTROSTATIC SPRAYING DEVICE



(57) Abstract: An electrostatic spraying device has a removable cartridge with a reservoir (210) containing a volume of liquid compositions to be electrically sprayed. The reservoir (210) is deformable according to inner pressure and configured to provide a removable cartridge (200). The device includes a dispensing unit for spraying the liquid composition. The dispensing unit includes a nozzle (240) for dispensing the liquid composition and an emitter electrode (250) which charges the liquid composition for electrostatically spraying the liquid composition out through the nozzle. A suction pump (230) is integrated into the dispensing unit in an immediately upstream relation with the reservoir (210) for feeding the liquid composition from the reservoir (210) to the nozzle (240). Thus, the suction pump (230) can be concentrated together with the emitter electrode (250) and the nozzle (240) into the dispensing unit on one end of the reservoir (210), enabling to realize the cartridge of a compact design.

WO 2005/075094 A1

GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.